

loss and damage was about \$32,600,000. Grouped by States the losses were approximately as follows:

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|--------------------|------------|
| Maine..... | \$100,000 |
| New Hampshire..... | 6,400,000 |
| Vermont..... | 16,500,000 |
| Massachusetts..... | 6,000,000 |
| Connecticut..... | 1,000,000 |
| New York..... | 2,027,700 |
| Total..... | 32,027,700 |

No figures were obtained regarding the State of Rhode Island, but the amount must have been relatively small.

In the State of Vermont alone 930 bridges were either destroyed or severely damaged, and the total losses in roads and bridges, as reported by the State highway department, was \$7,475,208. Industrial and agricul-

¹ A report to the Governor of Vermont by the Vermont flood survey committee gives the losses in the State, including railroad, telegraph and telephone lines, and street railways as \$24,743,755, as reported up to Dec. 5, 1927.

tural losses were about \$7,000,000 and \$1,500,000, respectively. Houses totally destroyed numbered 264, and 1,339 more were badly damaged. Nine thousand two hundred and five persons were compelled to leave their homes. Fifteen hundred cows and some other livestock were lost. Statistics regarding other New England States were in less detail, but of the same character. The number of people rendered temporarily homeless was reported by the American Red Cross as 16,272.

Apparently railroad losses have not been included in the above summaries. These were very heavy, especially those of the Central Vermont Railway between Burlington and White River Junction, Vt. No attempt was made to secure detailed statements, but rough estimates gathered from the press and other sources aggregated about \$5,000,000, irrespective of losses through enforced suspension of business, making a grand total of loss and damage of \$37,577,700.

THE VIRGINIA-DISTRICT OF COLUMBIA-MARYLAND TORNADO OF NOVEMBER 17, 1927

[Abstract of report by WILLIS E. HURD]

During Thursday, November 17, 1927, a low from the south, central over southwestern Virginia by the morning weather observations of that date, moved north-north-eastward, the center passing some 50 miles west of the District of Columbia near midday.

About 2:15 p. m. a tornado formed in rough country in Fairfax County, Va., reaching the ground about 3 miles southwest of Alexandria. It traversed the western part of the city and the extreme southeast corner of Arlington County, then crossed the Potomac River at an acute angle. In the District of Columbia the naval air station and navy yard were visited, and from the latter (about Eighth and M Streets SE.) for about 2 miles to Benning Road and Nineteenth Street NE. the tornado swept a strip in a thickly built area. Beyond there was practically undeveloped land. The tornado went on in to Prince Georges County, Md., to near East Riverdale.

The length of path, well authenticated, is 17 miles. The width was found from 20 yards or less to not quite 300 yards, but seemingly averaged about 140 yards. The best established times were 2:34 p. m. at the naval air station and 2:38 at Benning Road, the latter noted by a trolley-car conductor. These are in good accord, but separated by too short a distance to fix the speed of advance satisfactorily.

The tornado was probably most intense in Alexandria and in Arlington County. It seemed to be rather intense, again just before and just after crossing the District-Maryland line. There was no fatality really due to the tornado, but those injured enough to require more than first-aid treatment numbered 31—10 in Alexandria, 2 in Arlington County, and 19 in Washington.

The total damage to property, according to conservative estimates, amounted to \$690,000, distributed as follows: Alexandria, \$200,000; Arlington County, \$125,000; naval air station, \$100,000; navy yard, \$80,000;

remainder of District of Columbia, \$120,000; near-by communities in Maryland, \$65,000. In Fairfax County the damage was so slight as not to be considered.

The advance of the tornado, when the path is accurately plotted on a large-scale United States Geological Survey map, is found to have been in direction north 33° east. The primary low during this 12-hour period between observations advanced about north 38° east, according to the Washington weather map. On April 5, 1923, the tornado that occurred a few miles northwest of the recent track advanced about north 59° east, while the primary low is indicated by the REVIEW Chart II as advancing during the 12 hours north 49° east.

This is the third tornado noted in the District of Columbia within a five-year period and very much the most serious. Also it is noteworthy that the Virginia portion of the track shows far greater damage than any one tornado ever before caused in that State.

It is of interest that the observatory of the naval air station obtained an actual meteorological record of the tornado at close quarters, since it was struck by the right-hand edge of the funnel just prior to the destruction done to hangar, planes, and buildings. In advance of the tornado the reading of the barometer was 29.57 inches, which is only a hundredth of an inch lower than the simultaneous reading at the central office of the Weather Bureau, almost 4 miles to northwestward. The first violent blast at 2:34 p. m. gave a velocity of 93 miles from the south and south-southeast on the observatory register, with pressure suddenly dropping to 29.11 inches. The wind then shifted rapidly to southeast, east-southeast, and east, by which time the wind speed had dropped to 33 miles, with recovering pressure. At the Weather Bureau (distant about 3 miles) the wind at the time was from the southwest, velocity 16 miles, both wind and pressure being unaffected as far as the records indicate

WATERSPOUT IN THE POTOMAC RIVER, WASHINGTON, D. C., NOVEMBER 17, 1927

By WILLIS E. HURD

Nearly an hour and a half after the tornado of November 17, 1927, struck the eastern shore of the Potomac or, precisely, at 3:54 p. m., at which time the worst rain and wind squall of the general cyclone occurred at Washington, D. C., a waterspout formed in the river west of Anacostia. Although the spout was considerably veiled by the gloom and heavy rain then prevailing, it was seen from the naval air station to move directly toward the southeast and dash itself in pieces on the

shore two minutes later. It is said to have been some 300 feet in height, reaching to the squall cloud, with river water seen to course up about one-third of its length. At this time the maximum wind velocity of 60 miles an hour for a two-minute period from the southwest was registered at the Weather Bureau. The wind direction for the hour preceding 3:45 p. m. had been from the south. This is probably the first waterspout known to have occurred along this portion of the Potomac.